CLAIMS: Please cancel claims 7 through 13 and add the following "NEW" claims 14 through 46. The following are all the claims in the Application with the status and the text of all active claims listed:

1- 13 (CANCELLED)

14. (NEW) A means for creating optimized elements of a device, comprising:

(a) selecting an equation or set equations that models the behavior of the elements of a device;

(b) selecting a range for each input variable in said equation or set of equations;

(c) selecting the number of trials;

(d) selecting the logical distribution function of each of the said input variables;

(e) selecting at least two fuzzy level boundaries for each of the said phenomenon;

(f) generating values for all of said input variables of all of said trials, within said input variable's said range and within said logical distribution, using Monte Carlo simulations;

(g) solving said equation or equations to produce outputs to produce a Meta Model;

(h) increasing or decreasing the generated values of one of said input variables by fixed increments for each of said trials;

(i) solving said equation or equations using the incremented or decremented values of one of said input values;

(j) identifying the fuzzy level placement within said fuzzy level boundary for each of said outputs generated using said incremented or decremented input values for each of said trials;

(k) calculating the probability of said fuzzy level placement for one of said outputs by dividing the number of said outputs at each of the said fuzzy levels by the number of said trials;

(l) categorizing said fuzzy level placements for said output as indicating a positive or negative correlation;

(m) categorizing the magnitude of said fuzzy level placement when there are

more than two of the said fuzzy level boundaries;

(n) repeating the process steps h through m for each of the remaining input variables;

(o) mapping said correlations and said probabilities of the relationships between said input variables and phenomena in the form of a fuzzy cognitive map; and

(p) adjusting the characteristics of said elements of said device, in accordance with said fuzzy cognitive map.

15. (NEW) A means for creating optimized elements of a device as in claim 14, wherein said device is mechanical.

16. (NEW) A means for creating optimized elements of a device as in claim 14, wherein said device is electrical.

17. (NEW) A means for creating optimized elements of a device as in claim 14, wherein said device is optical.

18. (NEW) A means for creating optimized elements of a device as in claim 14, wherein said device is hydraulic.

19. (NEW) A means for creating optimized elements of a device as in claim 14, wherein said device is pneumatic.

20. (NEW) A means for creating optimized elements of a device as in claim 14, wherein said device is magnetic.

21. (NEW) A means for creating optimized elements of a device as in claim 14, wherein adjusting the characteristics of said elements of said device, in accordance with said fuzzy cognitive map, is done by changing the dimensions of a part of a device.

22. (NEW) A means for creating optimized elements of a device as in claim 14, wherein adjusting the characteristics of said elements of said device, in accordance with said fuzzy cognitive map, is done by changing the composition of a part of a device.

23. (NEW) A means for creating optimized elements of a device as in claim 14, wherein adjusting the characteristics of said elements of said device, in accordance with said fuzzy cognitive map, is done by replacing one part with another part.

24. (NEW) A means for creating optimized elements of a device as in claim 14, wherein adjusting the characteristics of said elements of said device, in accordance with said fuzzy cognitive map, is done by altering the design of a part.

25. (NEW) A means for creating optimized elements of a device as in claim 24, wherein adjusting the characteristics of said elements of said device, in accordance with said fuzzy cognitive map, is done by altering the design of a part in response to the mechanical dynamics of said part.

26. (NEW) A means for creating optimized elements of a device as in claim 24, wherein adjusting the characteristics of said elements of said device, in accordance with said fuzzy cognitive map, is done by altering the design of a part in response to the fluid dynamics of said part.

27. (NEW) A means for creating optimized elements of a device as in claim 24, wherein adjusting the characteristics of said elements of said device, in accordance with said fuzzy cognitive map, is done by altering the design of a part in response to the thermodynamics of said part.

28. (NEW) A means for creating optimized elements of a device as in claim 24, wherein adjusting the characteristics of said elements of said device, in accordance with said fuzzy cognitive map, is done by altering the design of a part in response to the electromagnetics of said part.

29. (NEW) A means for predicting the behavior of a target population under given conditions, comprising:

(a) selecting an equation or set equations that models the behavior of a population;

(b) selecting a range for each input variable in said equation or set of equations;

(c) selecting the number of trials;

(d) selecting the logical distribution function of each of the said input variables;

(e) selecting at least two fuzzy level boundaries for each of the said phenomenon;

(f) generating values for all of said input variables of all of said trials, within said input variable's said range and within said logical distribution, using Monte Carlo simulations;

(g) solving said equation or equations to produce outputs to produce a Meta Model;

(h) increasing or decreasing the generated values of one of said input variables by fixed increments for each of said trials;

(i) solving said equation or equations using the incremented or decremented values of one of said input values;

(j) identifying the fuzzy level placement within said fuzzy level boundary for each of said outputs generated using said incremented or decremented input values for each of said trials;

(k) calculating the probability of said fuzzy level placement for one of said outputs by dividing the number of said outputs at each of the said fuzzy levels by the number of said trials;

(l) categorizing said fuzzy level placements for said output as indicating a positive or negative correlation;

(m) categorizing the magnitude of said fuzzy level placement when there are more than two of the said fuzzy level boundaries;

(n) repeating the process steps h through m for each of the remaining input variables;

(o) mapping said correlations and said probabilities of the relationships between said input variables and phenomena in the form of a fuzzy cognitive map; and

(p) predicting the behavior of a target population by examining said fuzzy cognitive map.

30. (NEW) A means for predicting the behavior of a target population under given conditions as in claim 29, wherein said population is human.

31. (NEW) A means for predicting the behavior of a target population under given conditions as in claim 30, wherein said prediction is used to create a report that estimates the effectiveness of an advertisement campaign.

32. (NEW) A means for predicting the behavior of a target population under given conditions as in claim 29, wherein said prediction is used to create a report that estimates a product's usage pattern.

33. (NEW) A means for predicting the behavior of a target population under given conditions as in claim 30, wherein said prediction is used to create a report that estimates a product's usage pattern.

34. (NEW) A means for predicting the behavior of a target population under given conditions as in claim 30, wherein said prediction is used to create a report that estimates a commodity's usage pattern.

35. (NEW) A means for predicting the behavior of a target population under given conditions as in claim 30, wherein said prediction is used to create a report that estimates a service's usage pattern.

36. (NEW) A means for predicting the behavior of a target population under given conditions as in claim 29, wherein said population is not human.

37. (NEW) A means for predicting the behavior of a target population under given conditions as in claim 36, wherein said prediction is used to create a report that estimates the behavior of livestock.

38. (NEW) A means for predicting the behavior of a target population under given conditions as in claim 36, wherein said prediction is used to create a report that estimates the growth of plants.

39. (NEW) A means for predicting the behavior of a target population under given conditions as in claim 29, wherein said prediction is used to adjust the data in a computer program to change the computer's output.

40. (NEW) A means for processing electro-magnetic signals, comprising:

(a) selecting an equation or set equations that models the behavior of electromagnetic signal;

(b) selecting a range for each input variable in said equation or set of equations;

(c) selecting the number of trials;

(d) selecting the logical distribution function of each of the said input variables;

(e) selecting at least two fuzzy level boundaries for each of the said phenomenon;

(f) generating values for all of said input variables of all of said trials, within said input variable's said range and within said logical distribution, using Monte Carlo simulations;

(g) solving said equation or equations to produce outputs to produce a Meta Model;
(h) increasing or decreasing the generated values of one of said input variables by fixed increments for each of said trials;
(i) solving said equation or equations using the incremented or decremented values of one of said input values;
(j) identifying the fuzzy level placement within said fuzzy level boundary for each of said outputs generated using said incremented or decremented input values for each of said trials;
(k) calculating the probability of said fuzzy level placement for one of said outputs by dividing the number of said outputs at each of the said fuzzy levels by the number of said trials;
(l) categorizing said fuzzy level placements for said output as indicating a positive or negative correlation;
(m) categorizing the magnitude of said fuzzy level placement when there are more than two of the said fuzzy level boundaries;
(n) repeating the process steps h through m for each of the remaining input variables;
(o) mapping said correlations and said probabilities of the relationships between said input variables and phenomena in the form of a fuzzy cognitive map; and
(p) transforming said electro-magnetic signal based on said fuzzy cognitive map into a useful output signals.

41. (NEW) A means for creating optimized materials, comprising:
(a) selecting an equation or set equations that models the behavior of a material;
(b) selecting a range for each input variable in said equation or set of equations;
(c) selecting the number of trials;
(d) selecting the logical distribution function of each of the said input variables;
(e) selecting at least two fuzzy level boundaries for each of the said phenomenon;
(f) generating values for all of said input variables of all of said trials, within said input variable's said range and within said logical distribution, using Monte Carlo simulations;
(g) solving said equation or equations to produce outputs to produce a Meta Model;
(h) increasing or decreasing the generated values of one of said input variables by fixed increments for each of said trials;
(i) solving said equation or equations using the incremented or decremented values of one of said input values;

(j) identifying the fuzzy level placement within said fuzzy level boundary for each of said outputs generated using said incremented or decremented input values for each of said trials;

(k) calculating the probability of said fuzzy level placement for one of said outputs by dividing the number of said outputs at each of the said fuzzy levels by the number of said trials;

(l) categorizing said fuzzy level placements for said output as indicating a positive or negative correlation;

(m) categorizing the magnitude of said fuzzy level placement when there are more than two of the said fuzzy level boundaries;

(n) repeating the process steps h through m for each of the remaining input variables;

(o) mapping said correlations and said probabilities of the relationships between said input variables and phenomena in the form of a fuzzy cognitive map;

(p) adjusting the chemical and/or the structural characteristics of said material using said fuzzy cognitive map; and

(q) synthesizing said material to produce a product.

42. (NEW) A means for optimizing a process, comprising:

(a) selecting an equation or set equations that models the behavior of a process;

(b) selecting a range for each input variable in said equation or set of equations;

(c) selecting the number of trials;

(d) selecting the logical distribution function of each of the said input variables;

(e) selecting at least two fuzzy level boundaries for each of the said phenomenon;

(f) generating values for all of said input variables of all of said trials, within said input variable's said range and within said logical distribution, using Monte Carlo simulations;

(g) solving said equation or equations to produce outputs to produce a Meta Model;

(h) increasing or decreasing the generated values of one of said input variables by fixed increments for each of said trials;

(i) solving said equation or equations using the incremented or decremented values of one of said input values;

(j) identifying the fuzzy level placement within said fuzzy level boundary for each of said outputs generated using said incremented or decremented input values for each of said trials;

(k) calculating the probability of said fuzzy level placement for one of said outputs by dividing the number of said outputs at each of the said fuzzy levels by the number of said trials;

(l) categorizing said fuzzy level placements for said output as indicating a positive or negative correlation;

(m) categorizing the magnitude of said fuzzy level placement when there are more than two of the said fuzzy level boundaries;

(n) repeating the process steps h through m for each of the remaining input variables;

(o) mapping said correlations and said probabilities of the relationships between said input variables and phenomena in the form of a fuzzy cognitive map; and

(p) adjusting said process, using said fuzzy cognitive map, to optimize said process.

43. (NEW) The means for optimizing a process in claim 42, wherein said process is use for the preparation of plans for the design of a facility that manufactures product.

44. (NEW) The means for optimizing a process in claim 42, wherein said process is used to create a document that serves
as a template for the organization of a company.

45. (NEW) The means for optimizing a process in claim 42, wherein said process is a chemical process.

46. (NEW) The means for optimizing a process in claim 42 wherein, said process output is used to adjust the data in a computer program to change the computer's output.